

Agilent 990 Micro Gas Chromatograph
Site Preparation Guide



Notices

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Manual Part Number

G3588-90002

Edition

First edition, September 2019

Printed in China

Agilent Technologies, Inc.
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Shanghai 200131 P.R.China

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CAUTION

A CAUTION notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a CAUTION notice until the indicated conditions are fully understood and met.

WARNING

A WARNING notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

Contents

Site Preparation Checklist	7
Customer Responsibilities	8
Environmental Requirements	8
Storage requirements	8
Space and Weight Requirements	9
Power Requirements	11
Maximum Cable Length	11
Micro GC Installation Kit	12
Gas Supply Requirements	12
Sample Gas Requirements	13
Carrier Gas Connection Requirements	14
Exhaust Venting	15
Network Requirements	15
Minimum Computer Requirements	15
Communication Ports	16

Site Preparation Checklist

For typical requirements for system installation, see **Figure 2** on page 10.

Use the following checklist to ensure that the site is properly prepared for GC system installation.

- 1** Use the following checklist to ensure that the site is properly prepared for Micro GC system installation.
- 2** Ensure that the appropriate installation hardware has been acquired. See **Micro GC Installation Kit** on page 12.
- 3** Ensure that the location in which the Micro GC system is being installed meets the requirements for environmental conditions. **Environmental Requirements** on page 8.
- 4** Prepare bench space for the Micro GC system. Ensure that the bench has the size and weight capacity to accommodate the Micro GC and associated components. See **Space and Weight Requirements** on page 9.
- 5** Ensure that system components are oriented so that they can be connected properly. See **Maximum Cable Length** on page 11.
- 6** Ensure that appropriate venting is provided for the Micro GC system. See **Exhaust Venting** on page 15.
- 7** Ensure that a dedicated power circuit is available for each device in the system. See **Power Requirements** on page 11.
- 8** Ensure that appropriate gas supplies are provided for the Micro GC system. See **Gas Supply Requirements** on page 12.
- 9** Ensure that appropriate gas plumbing is provided for the Micro GC system. See **Carrier Gas Connection Requirements** on page 14.
- 10** If the Micro GC system being installed includes a data system, ensure that the PC meets the requirements necessary to properly support the GC system. See **Minimum Computer Requirements** on page 15. For more information, see the site prep guide for your data system.
- 11** If the Micro GC being installed is to be connected to a site LAN, ensure that the appropriate cabling is available. See **Network Requirements** on page 15.

Customer Responsibilities

To ensure a quick, safe, and uncomplicated installation, we kindly request that you make provisions according to the following requirements before your Agilent Technologies, Inc. service engineer installs your instrument(s).

- Installation and use should only be done by trained and qualified personnel.
- The specifications in this manual outline the necessary space, electrical outlets, gases, tubing, operating supplies, consumables, and other usage-dependent items required for the successful installation of instruments and systems.
- If Agilent Technologies is delivering installation and familiarization services, instrument users should be present for these services to avoid missing important operational, maintenance, and safety information.
- If Agilent Technologies is delivering installation and familiarization services, delays due to inadequate site preparation could cause loss of instrument use during the warranty period. In extreme cases, Agilent Technologies may ask to be reimbursed for the additional time required to complete the installation. Agilent Technologies provides service during the warranty period and under maintenance agreements only if the specified site requirements are met.

Environmental Requirements

- **Pollution degree:** 2
- **Maximum Humidity:** 95 % RH (noncondensing)
- **Operating Temperature:** 0 to +50 °C
- **Maximum altitude:** 2,000 meters above sea level

The Micro GC is intended for indoor use. A 990 Mobile Micro GC is required for out-of-the-lab measurements.

Protect the Micro GC from corrosive chemicals, gases, dust, or particulate accumulation. The Micro GC should also be protected from the direct venting from air conditioners, heaters, furnaces, or fans.

Storage requirements

- **Humidity:** 10 % to 95 % RH (noncondensing)
- **Temperature:** -40 to +70 °C

Space and Weight Requirements

Allow sufficient bench space to permit installation of workstations and Micro GC accessories. **Table 1** lists the physical dimensions and weight of the Micro GC and the peripheral instruments that may be installed near it.

Allow 20 to 30 cm of space at the sides and rear of the Micro GC to permit air circulation. **Figure 2** on page 10 illustrates the space requirements.

Table 1 Product dimensions and weight

Instrument	Height		Width		Length		Weight*	
	in	cm	in	cm	in	cm	lb	kg
Micro GC	11.13	28.28	5.71	14.50	12.97	32.94	16.0	7.3
Micro GC with Channel Extension Cabinet installed	11.13	28.28	11.83	30.04	12.97	32.94	34.5	15.6
Power supply	1.8	4.6	3.3	8.5	8.3	21.0	2.4	1.1
Mobile Micro GC quad channel	10.6	26.9	16.0	40.6	21.2	53.8	82.67	37.5

* The weight may vary due to different analytical channel configurations.



Figure 1. Dimensions of the Agilent 990 Mobile Micro GC

Typical GC System - 990 Micro GC with computer and printer

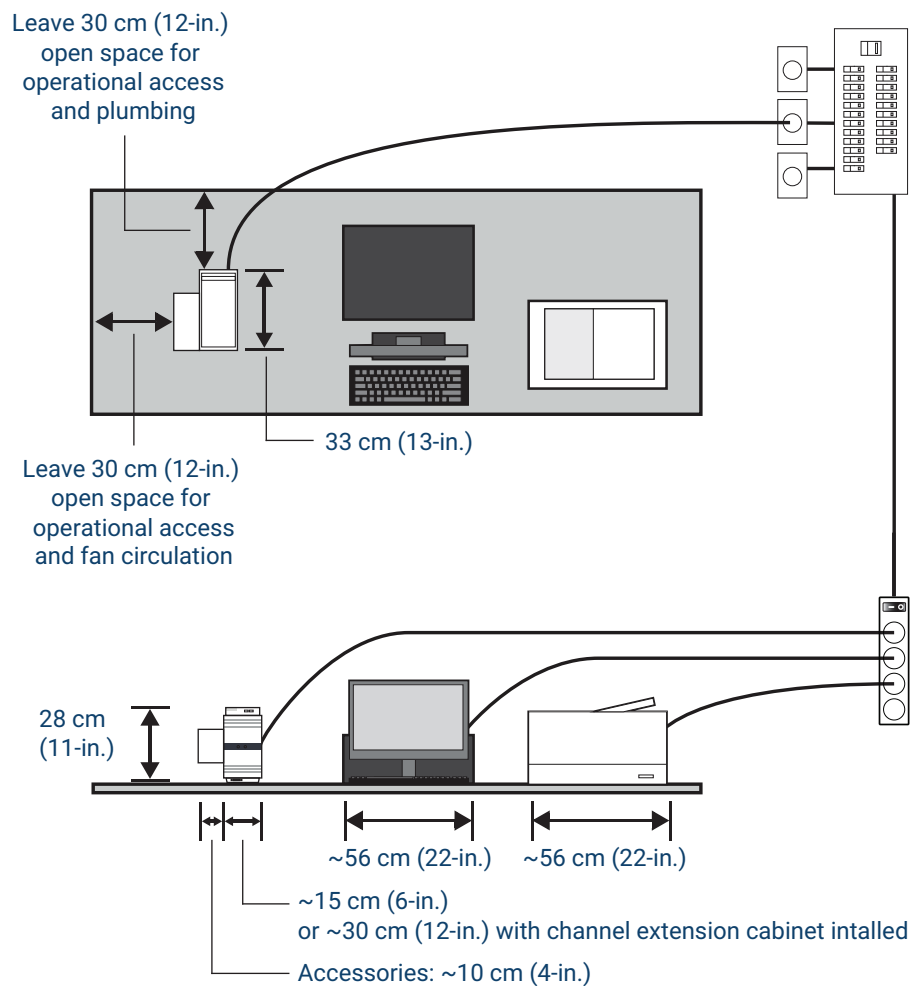


Figure 2. Space requirement diagrams for the Agilent 990 Micro GC

Power Requirements

- **Voltage:** 100 to 240 VAC
- **Frequency:** 50 to 60 Hz
- **Installation/Overvoltage Category:** II
- The power source must be reserved exclusively for the instrument.
- The power source and receptacles require a suitable, isolated ground.
- Ensure proper receptacle grounding.
- Use a dedicated receptacle to reduce interference.

Power supply

Each Micro GC is delivered with a required, 12V VDC, 180 W universal power supply.

Maximum Cable Length

The distance between system modules may be limited by some of the cabling.

Table 2 Cable and hose lengths

Item	Length
LAN cable	2.8 m (9.2 ft)
Power cords	2 m (6.6 ft)

Micro GC Installation Kit

Table 3 Micro GC Installation Kit (p/n 19199H)

Part Number	item	Quantity	Unit
5080-8750	Fittings 1/8inch Brass 20/PK	1	PK
5180-4160	Tee, 1/8inch Brass Union 2/PK	4	PK
G3581-20061	1/8in x .065in Copper Tubing,5M	1	EA
G3588-00769	Push Sheet	1	EA
0100-2144	1/8inch Ball Valve	2	EA
G3588-67001	MGC Tool Kit	1	EA
1480-1430	Pin 0.125 +0.0002 0.75 +/-0.010 SST 18-8	5	EA
9300-0311	Leak detector 8oz	1	EA
G3588-80800	990 Tools Box Pack	1	EA

Gas Supply Requirements

External gas supply

Use a gas cylinder with a two-stage pressure regulator in proper working condition. Adjust the carrier gas pressure to 550 kPa \pm 10 kPa (80 psi \pm 1.5 psi).

Internal gas supply of the Mobile Micro GC

To fill the built-in carrier gas supply tank, use a separate gas cylinder with a pressure much greater than 12,400 kPa (124 bar, 1,800 psi).

Gas purity

Carrier gas must have a minimum purity of 99.999 %.

Sample Gas Requirements

The Micro GC is designed for the analysis of gases and vapors only. Exceptions are Liquefied Petroleum Gas (LPG) and Liquefied Natural Gas (LNG). These samples can be introduced on the Micro GC using the optional Micro-Gasifier.

You are advised to prepare a noncondensing gaseous standard sample for routine checkup of the instrument. Sample pressure should be between 0 and 100 kPa (0 to 1 bar, 0 to 15 psi), and the sample temperature should be between 0 and 110 °C for heated sample line and heated injectors.

Aerosols, droplets, particles, and polymers must be filtered out. Agilent recommends the use of the external filter kit for particle removal. This filter kit (p/n CP736729) includes a 5- μ filter, and is part of the ship kit that ships with every Micro GC. An optional Genie filter is available for the removal of aerosols or droplets. See the Agilent website for more details, or contact your local Agilent sales representative.

The outlet of the sample container must fit a stainless steel capillary of 1/16 inch outside diameter. On the instrument side, the sample tubing is connected to a 1/16 inch Swagelok female nut.

Carrier Gas Connection Requirements

The carrier gas line is connected from the bulk carrier gas tank to the Micro GC on the rear panel through the **CARRIER 1** or **CARRIER 2** port. Do not use plastic tubing. Use only properly rinsed copper or stainless steel tubing delivered with the instrument.

The use of Gas Clean filters is recommended. Gas Clean filters are filled with nitrogen. If you are not using nitrogen as the carrier gas, flush filters and gas lines after installation of a new filter. **Table 4** lists available gas filters. **Figure 3** shows the Gas Clean oxygen filter (p/n CP17970) installed in series with the Gas Clean moisture filter (p/n CP17971).

Table 4 Gas filter list

Part Number	Gas Filter
CP738408	Gas Clean Filter Kit for TCD
CP17970	Gas Clean Oxygen Filter, replacement for CP738408
CP17971	Gas Clean Moisture Filter, replacement for CP738408
CP17976	Gas Clean Carrier Gas Kit
CP17973	Gas Clean GC/MS filter, replacement for CP17976
OT3-2	Oxygen/Moisture Traps

There is a starter kit available which includes a dual connection unit and an oxygen and a moisture filter (p/n CP738408).

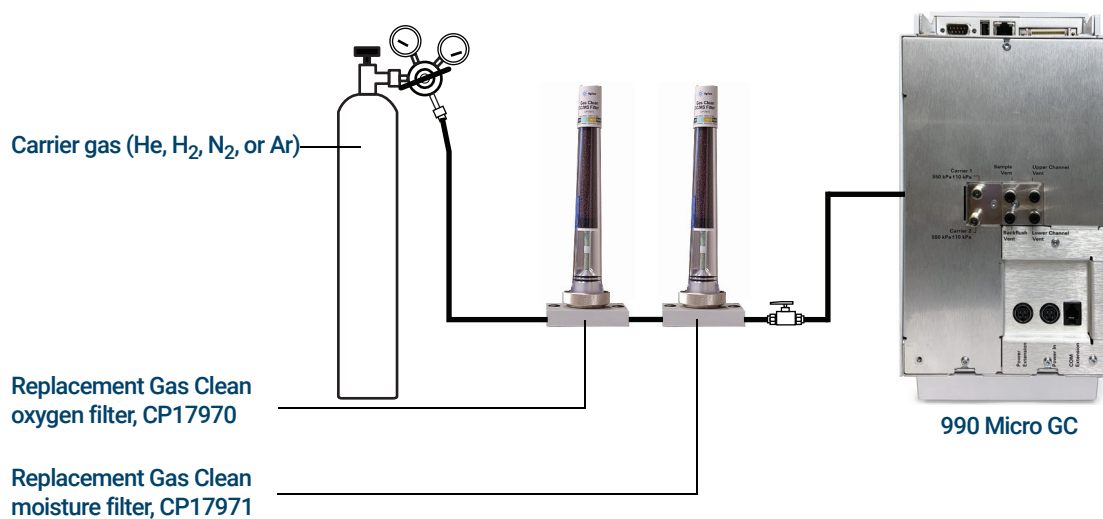


Figure 3. Recommended Gas Clean filters

CAUTION

Never use hydrogen as the carrier gas of the Agilent 990 Mobile Micro GC.

Exhaust Venting

During normal operation of the GC, some of the carrier gas and sample vents outside the instrument through the vents on the rear panel. If any sample components are toxic or noxious, or if hydrogen is used as the carrier gas, these exhausts must be vented to a fume hood.

NOTE

Exhaust venting must comply with all local environmental and safety codes. Contact your Environmental Health & Safety (EHS) specialist.

- 1 Place the Micro GC in the hood or attach a large diameter venting tube to the relevant outlet for proper ventilation. All of the vents on the rear panel terminate in the 1/8 inch female Swagelok fittings. Carrier gas vents from Upper/Lower Channel Vents and Backflush Vent. Sample gas vents from Sample Vent on the rear panel. The position of the vents on the rear panel are shown in the "Instrument Overview" chapter of the 990 Micro GC User Manual (G3588-90010).
- 2 To further prevent contamination from noxious gases, attach a chemical trap to the vent(s).

Network Requirements

- Customer cable type should be Cat5 UTP/STP or better
- Customer network should comply with Standard Ethernet (IEEE 802.3)
- TCP/IP for network connectivity

Minimum Computer Requirements

If you are using an Agilent Chromatography Data System such as the OpenLAB CDS system, refer to its computer requirements.

For PROstation software and related utilities, the minimum requirements are:

- **Processor speed:** Processor with 2 GHz CPU or higher
- **Internal RAM:** Recommended 4 GB RAM or more using Windows 7
- **Hard disk space:** > 20 GB
- **Microsoft Windows version:**
 - Windows XP professional edition (ServicePack 2 or higher)
 - Windows 7 32-bit or 64-bit (ServicePack 1 or higher)
 - Windows 8.1
 - Windows 10
- Free USB port
- Free Ethernet port

Communication Ports

Table 5 shows the Micro GC models communication ports.

Table 5 Micro GC communication ports by license

Port	Connection	990 Micro GC	990 Micro GC (Mobile license)	990 Micro GC (PRO license)
LAN	Ethernet	Interface with PC	Interface with PC	Interface with PC
COM1	RS-232	VICI Valve	VICI Valve	VICI Valve, Modbus*
COM2 and COM3	RS232 RS422 RS485 2-wire RS485 4-wire	Not available	Not available	Modbus**†
Digital and Analog I/O		Digital I/O; ready in - ready out start in - start out	Digital I/O‡; ready in - ready out start in - start out	Digital Analog I/O † ready in - ready out start in - start out Extension boards***
HDMI	HDMI	LCD**	LCD**	LCD**
USB	USB	VICI Valve††, WIFI interface	VICI Valve††, WIFI interface, USB storage, License dongle	VICI Valve††, WIFI interface, USB storage, License dongle
CAN	CAN	Channel Extension Cabinet Connection††	Not available	Channel Extension Cabinet Connection††

* Requires additional license.

† The breakaway on the side of the top assembly must be removed. See the Agilent 990 Micro GC User Manual (G3588-90010).

‡ 'Y' cable (G3588-60825) is available.)

** Optional accessory.

†† Requires USB-to-RS232 converter.

‡‡ See the Agilent 990 Micro GC Channel Extension Cabinet Installation Manual (G3588-90017).

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First edition, September 2019



G3588-90002

